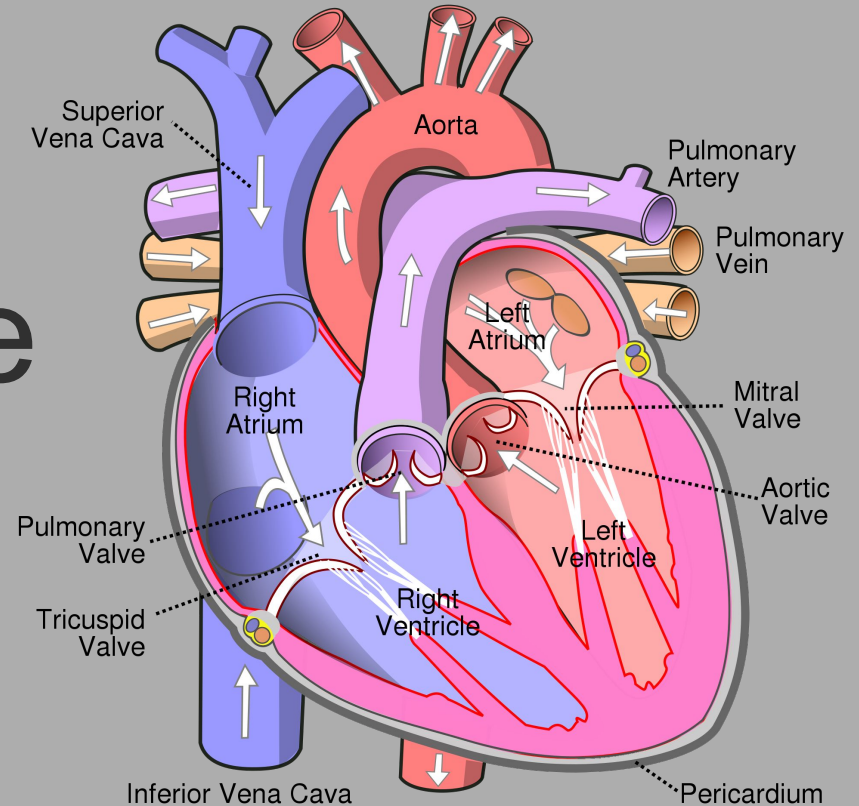


Heart Failure

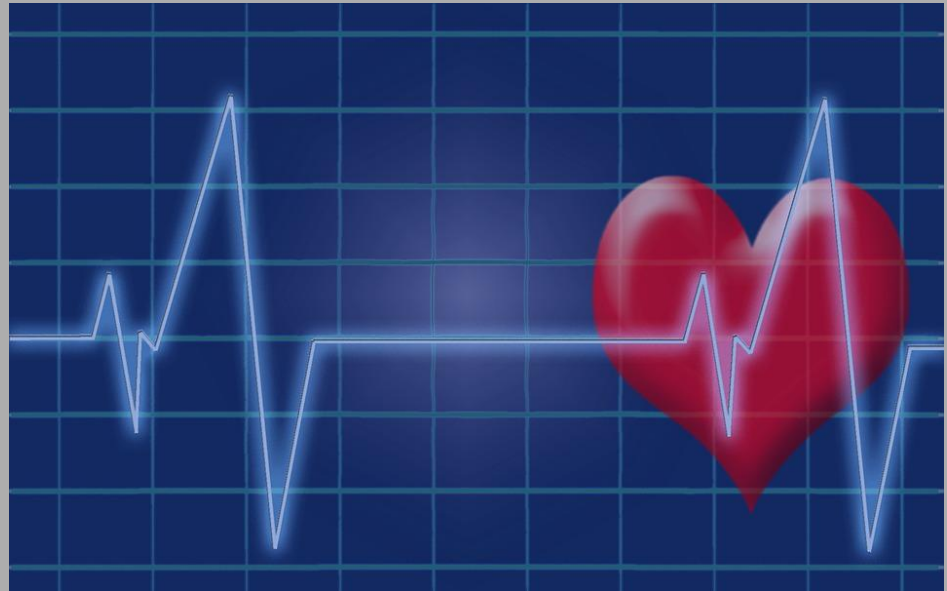
Presentation by:
Sarah Musselwhite



Heart Failure - A chronic condition in which the heart does not pump blood as well as it should through the body. Also known as CHF, or Congestive Heart Failure. Heart failure can occur if the heart cannot pump (systolic) or fill (diastolic) adequately.

Symptoms include:

- Shortness of breath
- Fatigue
- Swelling of legs
- Rapid heartbeat





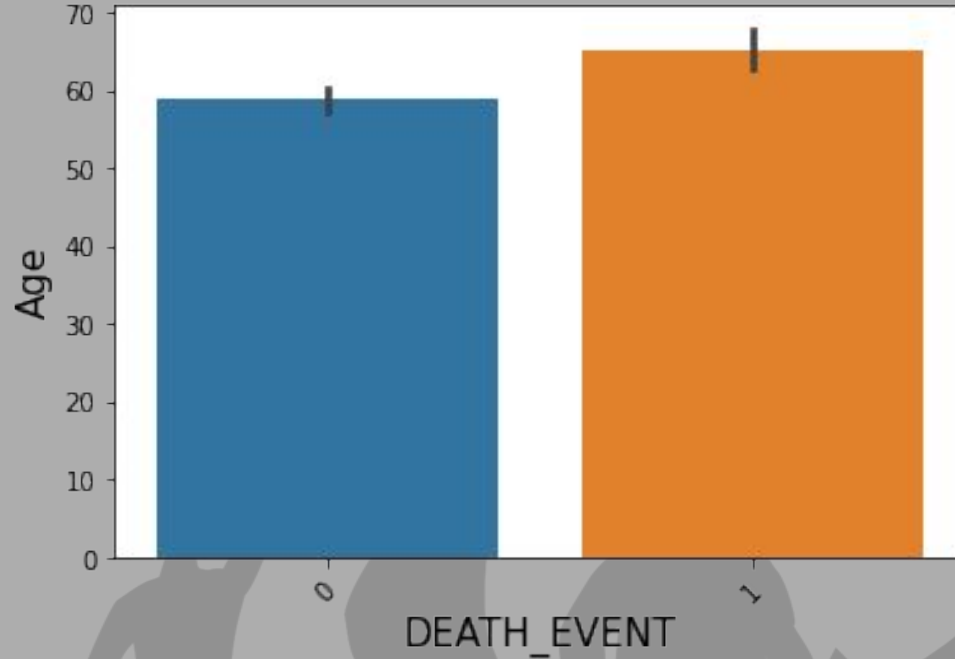
WHY?: With this project I was hoping to study the effects of different variables that contribute to heart failure, in patients of multiple ages.

FOR WHOM?: Multiple stakeholders from pharmaceutical companies looking research possible better treatments/ treatment plans.

Data:

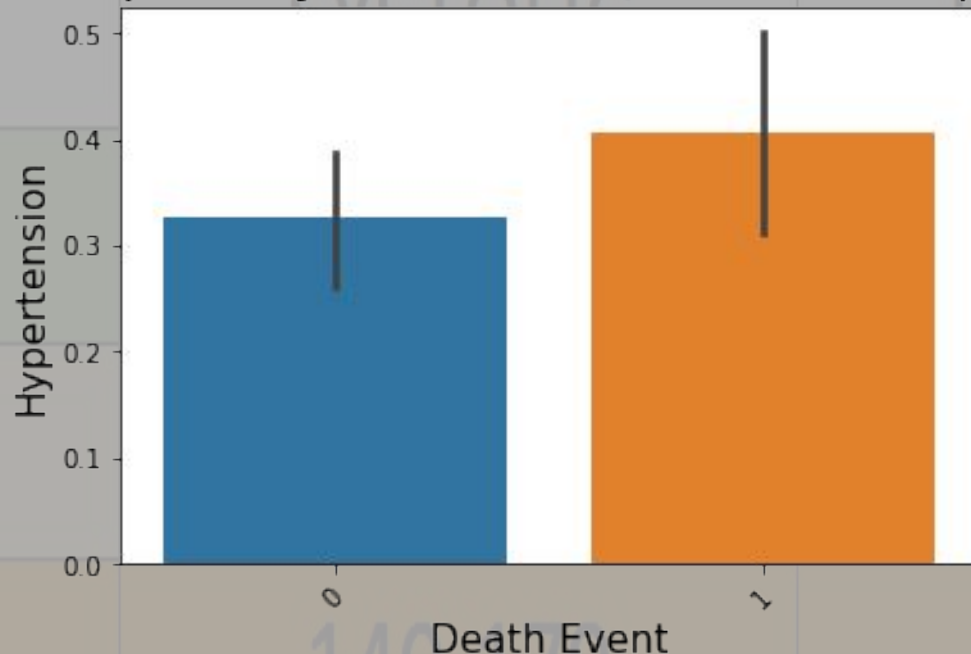
- **age:** Age of the patient
- **anaemia:** If the patient had the haemoglobin below the normal range
- **diabetes:** If the patient was diabetic
- **high_blood_pressure:** If the patient had hypertension
- **sex:** The gender of the patient
- **smoking:** If the patient smokes actively or ever did in past
- **time:** It is the time of the patient's follow-up visit for the disease in months
- **DEATH_EVENT:** If the patient deceased during the follow-up period

Age as a contributor to Heart Disease Death (0=N 1=Y)



For this visualization, I am exploring the trends in this data how differently age affects death events in a heart failure patient. 0 equals death did not occur due to heart failure, while 1 equals a death event. As we can see heart failure patients (depending upon how long they have suffered from HF, among other variables) seem to lose their battle, on average, around age 65-70.

Hypertension as a primary factor in death of heart patients (0=N 1=Y)



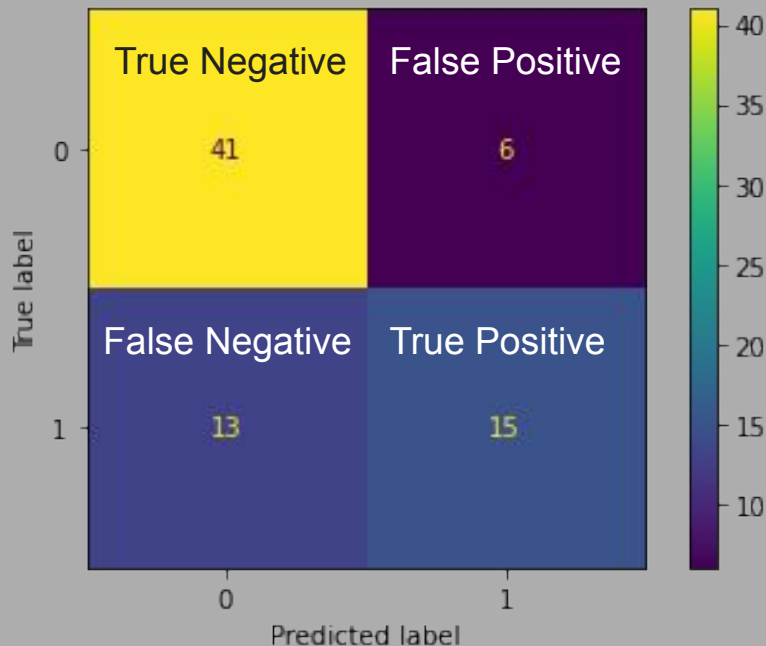
For this visualization, I am exploring the trends in this data how differently hypertension affects death events in a heart failure patient. 0 equals death did not occur, while 1 equals a death event. As we can see heart failure patients with diagnosed hypertension perish at a higher rate than those who experience heart failure, but have not been diagnosed with hypertension.

Model Choice: Logistic Regression

I chose the Logistic Regression model to be my final model for this project.

A true positive is an outcome where the model correctly predicts the positive class. Similarly, a true negative is an outcome where the model correctly predicts the negative class.

A false positive is an outcome where the model incorrectly predicts the positive class. And a false negative is an outcome where the model incorrectly predicts the negative class.



Stakeholders should consider the pros and cons of this type of model.

Pros:

1. One number describes all classes
2. Easy to interpret
3. Works the same with binary or multiclass

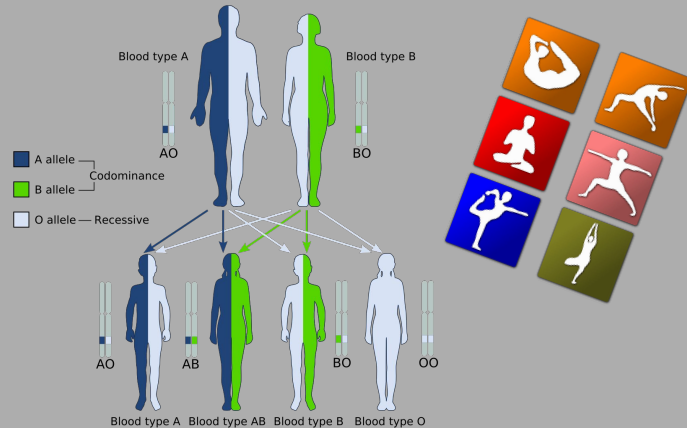
Cons:

1. A bad model can have high accuracy
2. Does not tell the whole story
3. Can be misleading when classes not balanced

Limitations would be a lack of broader variables (non nominal values) and factors that can contribute to a non-medically trained person.

I would move to include:

- History of heart issues?
- Genetic predisposition
- Other lifestyle habits (alcohol consumption, diet, exercise, etc)



HEART DISEASE PREVENTION



Recommendation

I made this analysis to promote general awareness about heart health and factors that one should keep in mind when considering their own heart health.

I would also recommend to investigate this data deeper, and to add a few other preventative health, genetics, and lifestyle variables as well.